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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,526	07/26/2000	Joseph Earl Ford	Ford 46-6	7844

7590

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EXAMINER

VALENCIA, DANIEL E

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/625,526

Applicant(s)

FORD ET AL.

Examiner

Daniel E Valencia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

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**DETAILED ACTION*****Inventorship***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Drawings***

New corrected drawings are required in this application because of the handwritten numerals. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7, 8, and 10-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Dragone U.S. Patent No. 6,263,127. Refer to the appropriate drawings or parts of the specification. Dragone discloses a free-space arrayed waveguide router with all of the limitations of the abovementioned claims. Regarding claims 1, 7, and 8, Dragone discloses an optical router (fig. 6) in an optical communication system for routing multiplexed signals having a plurality of wavelengths that create a spectrum through the communication system by spatially shifting the wavelengths said optical router including an output element comprising: a linear element (607) for receiving the signals having the plurality of wavelengths and for dispersing the spectrum into discrete regions onto an intermediate image plane (610); discontinuous optical element (609) in optical communication with the intermediate image plane for laterally shifting the discrete regions by predetermined lengths to produce a laterally shifted spectrum ( $\lambda_i$ ), each of said predetermined lengths being associated with one of the discrete regions; and a re-imaging optical (612 and 613) element for receiving the laterally shifted spectrum and for removing the dispersion created by linear element and for re-imaging the spectrum onto the output element. It is important to note that the sequence of components disclosed by Dragone allows different components to correspond to the different elements of the claimed invention for different claimed embodiments. Regarding claims 2 and 3, Dragone discloses that the linear element can be a micro-

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optic array (AWG1) comprising a plurality of input fibers (605) adapted to transmit one of a plurality of wavelengths. Dragone's disclosure shows that the linear element could be the MEMS mirror array (609) making the grating (612) the discontinuous optical element and the lens (613) in conjunction with AWG2 the re-imaging optical element, as described in claims 4 and 5.

Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Boevitch U.S. Patent No. 6,498,872. Refer to the appropriate drawings or parts of the specification. Regarding claim 1, Boevitch discloses an optical router (fig. 11) in an optical communication system for routing multiplexed signals having a plurality of wavelengths that create a spectrum through the communication system by spatially shifting the wavelengths said optical router including an output element comprising: a linear element (20) for receiving the signals having the plurality of wavelengths and for dispersing the spectrum into discrete regions onto an intermediate image plane (25); discontinuous optical element (50) in optical communication with the intermediate image plane for laterally shifting the discrete regions by predetermined lengths to produce a laterally shifted spectrum ( $\lambda_i$ ), each of said predetermined lengths being associated with one of the discrete regions; and a re-imaging optical (10 and 90) element for receiving the laterally shifted spectrum and for removing the dispersion created by linear element and for re-imaging the spectrum onto the output element, wherein the re-imaging element is a concave mirror.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dragone in view of Solgaard U.S. Patent No. 6,389,190. Refer to the appropriate drawings or parts of the specifications. Dragone as applied above, discloses an optical router with a majority of the claimed limitations; however the reference does not explicitly describe how the gratings are formed.

On the other hand, Solgaard discloses a multi-wavelength cross-connect optical switch that teaches the limitation that the Dragone reference lacks. With reference to claim 6, Solgaard discloses that the grating comprises a silicon wafer and a plurality of v-shaped grooves defined in the silicon wafer (fig. 5, and col. 7, lines 55-60). Solgaard teaches that gratings can be made accurately by etching v-grooves onto a substrate. Additionally, Solgaard and Dragone disclose similar wavelength routers. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Solgaard to the device disclosed by Dragone to arrive at the claimed invention.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dragone U.S. Patent No. 6,263,127 discloses a free-space arrayed waveguide router with a linear and discontinuous element for dispersing different wavelengths.

Aksyuk U.S. Patent No. 6,204,946 discloses a reconfigurable wavelength division multiplexer including a MEMS mirror array and a grating for shifting the spectrum.

Weverka U.S. Patent No. 6,501,877 discloses a wavelength router wherein the linear element comprises a grating and the discontinuous element is comprised of a MEMS array.

Novotny U.S. Patent No. 6,483,962 discloses an optical cross connect switch that acts as an equalizer and shifts the wavelength spectrum using a grating and a MEMS array.

Sappey U.S. Patent No. 6,415,080 discloses an Echelle grating dense wavelength division multiplexer that utilizes a linear element, a discontinuous element, and a re-shaping element to shift the wavelength spectrum.

Bishop U.S. Patent No. 6,263,123 discloses a pixellated WDM optical component that utilizes a MEMS mirror array and a grating.

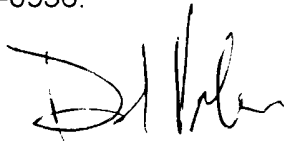
Tomlinson U.S. Patent No. 5,960,133 discloses a wavelength selective optical add/drop using tilting micro-mirrors for shifting the wavelength spectrum.

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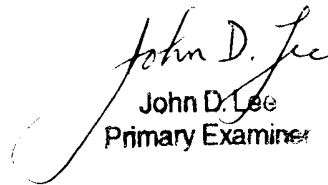
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.



DEV  
June 11, 2003



John D. Lee  
Primary Examiner